ASYMETRICALLY BLADED CEILING FAN

TECHNICAL FIELD OF THE INVENTION

This invention relates to a ceiling fan and a ceiling fan blade mounting arrangement that produces a center of rotational gravity that lies outside the vertical axis of the rotating fan.

BACKGROUND OF THE INVENTION

There are two methods of mounting blades to a ceiling fan so that the rotating weight of the fan is stabilized and the fan's center of rotational gravity lies within its vertical axis: (1) An even number of blades are mounted directly across from each other so the rotating weight of one blade is stabilized and matched by its complement; and (2) an even or odd number of blades may be "offset" so the sum of the blades' rotating weight is balanced. In each case, prior ceiling fans have more than one blade arranged in the circle of rotation so that the center of rotational gravity of the fan lies within the vertical axis. Thus, upon rotation, a single bladed ceiling

fan generates a center of rotational gravity that lies outside the fan's vertical axis. Such an arrangement is perceived as non-functional and unconventional.

Likewise, a ceiling fan blade mounting arrangement where the blades are not spaced equally around the fan's housing so as to produce a center of rotational gravity that lies outside the vertical axis of the rotating fan is unconventional as well. The present invention addresses this need.

SUMMARY OF THE INVENTION

The present invention relates to a ceiling fan blade mounting arrangement that produces a center of rotational gravity that lies outside the vertical axis of the rotating fan compensated by a stabilizing member. One object of the present invention is to provide an improved ceiling fan. Related objects and advantages will be apparent from the following description.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a single bladed ceiling fan of the invention.

FIG. 2 is another view of the single bladed ceiling fan of FIG. 1.

FIG. 3 is an elevated perspective view of another single bladed ceiling fan of the invention showing the arcuate body of the fan blade.

FIG. 4 is an elevated perspective view of still another single bladed ceiling fan of the invention showing the stabilizing member.

FIG. 5 is another view of the single bladed fan of FIG. 4.

FIG. 6 is a cross-sectional perspective view of the upper and lower casings of the housing showing the bore, light bulb socket and light bulb contained in the housing.

FIG. 7 is an elevated perspective view showing a ceiling fan blade mounting arrangement of the invention.

FIG. 8 is an elevated perspective view showing another fan blade mounting arrangement of the invention showing the stabilizing member and cover.

FIG. 9 is an elevated perspective view showing another blade mounting arrangement illustrating the arcuate body of the fan blade, the stabilizing member and cover.

FIG. 10 is an elevated perspective view showing another blade mounting arrangement illustrating the stabilizing members arranged about and between the multiple blades.

DESCRIPTION OF THE PREFERRED EMBODIMENT

For the purposes of promoting an understanding of the principles of the invention and presenting its currently understood best mode of operation, reference will now be made to the embodiments illustrated in the drawings and specific language will be used to describe the same. It will nevertheless be understood that no limitation of the scope of the invention is thereby intended, with such alterations and further modifications in the illustrated device and such further applications of the principles of the invention as illustrated therein being contemplated as would normally occur to one skilled in the art to which the invention relates.

Ceiling fan blade arrangements according to the present invention are shown in FIGS. 1 - 9, wherein like elements are identified by like numerals. With reference to FIGS. 1-3, one preferred embodiment of the invention comprises a fan 10 including a single blade 40 extending radially from a central motor housing 50. Blade 40 may be connected to the fan directly or indirectly with extension hardware known in the art. Blade 40 can be formed from wood, wicker, plastic or organic matter, such as palm leaves, for example, which materials are known in the art. Of course, materials that have mechanical and physical properties rendering them better suited for the ceiling fans of the invention are preferred. Plastic, wood, metal and such rigid materials are more preferred.

In one embodiment, blade 40 has an elongated arcuate body 41 that tapers from a proximal end 42 to its opposing distal end 44. In an embodiment, blade 40 has a cross-section that progressively tapers from a leading edge 46 to a trailing

edge 48. Such a fan would experience out-of-concentric rotation if not provided with some element to equal the balance of the fan or if the fan was not securely anchored in the ceiling at 500 via down rod 35, as shown in FIG. 2.

In another preferred embodiment shown in Figs. 4-6, a stabilizing member 70 is provided adjacent to the motor housing 50 opposite the single blade 40. As shown in FIG. 5, stabilizing member or stabilizer 70 has a thickness considerably greater than that of the opposing blade 40. Stabalizing member 70 is preferably configured as a non-blade stabilizer. In other words, the stabilizer preferably does not have the shape of a blade and/or perform the function of a blade. Stabilizing member 70 preferably performs two functions: (1) it stabilizes the rotating weight of the fan such that its center of rotational gravity lies within the vertical axis 90 of the fan; and (2) it equalizes the air or wind resistance or "drag" of blade 40. The greater thickness of stabilizing member 70 addresses the first concern, while opening 75 provides drag that approximates that generated by opposing blade 40. If desired, opening 75 may be enlarged or modified to form a partial air tunnel or "scoop" (not shown) in stabilizing member 70 to catch and direct air to and through the motor housing 50 to assist in cooling the electric drive motor during operation. Cover 80 is provided to cover opening 75, which provides the options of engaging other aeronautic variables that may be desirable.

Motor housing 50 can be provided with air ducts 53 in its upper casing 52 and/or lower casing 54, as shown in FIGS. 3 and 4. Air ducts 53 help cool motor 20, which contributes to prolonged life of the fan motor. With reference to FIG. 6, upper casing 52 includes bores 51 for accommodating light bulb socket 55 in which resides light bulb 58. Light bulb(s) 58 provide illumination upwardly

through bore 51.

With respect to FIGS. 7 - 9, in yet a further embodiment, fan 10 includes at least two fan blades 40 connected for rotation, arranged adjacent to each other in one semicircle of rotation 100. Stabilizing member 70 extends from fan 10 in a second semicircle of rotation 110 so that stabilizing member 70 stabilizes the rotating weight of the blades 40 on rotation so that the center of rotational gravity of the fan lies on longitudinal axis 90.

Yet another contemplated embodiment includes two or more blades 40 spaced at various asymmetric and/or non-opposing positions in a radial fashion about the motor housing 50 and relative to the vertical axis 90. The blades 40 may be identical in shape and mass, or may each have a different shape and/or mass. Accordingly, such a fan might include one or more stabilizing members 70 arranged about and/or between or among the multiple blades so long as the center of rotational gravity lies on the vertical axis 90 of fan 10, as shown in Fig. 10.

Alternatively, if the multi-bladed fan of this invention is sufficiently anchored at the ceiling portion 500 and the downrod 35 is of sufficient strength, fan 10 need not have stabilizing member 70 and should withstand the torque and out-of-concentric forces generated by the rotation of a single blade 40 or two or more non-opposing blades.

Although the ceiling fan and mounting arrangement provided by the present invention have been described with a preferred embodiment, those skilled in the art will understand that modifications, variations and combinations may be made without departing from the scope of this invention as set forth in the following Claims. Such modifications, variations, and combinations are considered to be

within the purview and scope of the appended Claims. For example, the fan blade arrangement of FIG. 4 could be modified to include cover 80 for covering opening 75, and bores 51 that accommodate light bulbs 58 could be omitted. Likewise, stabilizing member(s) 70 can be altered or omitted accordingly. The blade arrangements of FIGS. 4, 8, and 9 may differ from each other so long as the rotating weight of fan 10 is stabilized and the fan's center of rotational gravity lies within the fan's vertical axis 90. As noted however, alternatively, if the fan of this invention is sufficiently anchored at the ceiling portion 500 and the downrod 35 is of sufficient strength, fan 10 need not have stabilizing member 70 and should withstand the torque and out-of-concentric forces generated by the rotation of a single blade 40 or two or more non-opposing blades, as shown in FIGS. 1, 2, 3, 6 and 7.

While the invention has been illustrated and described in detail in the drawings and foregoing description, the same is to be considered as illustrative and not restrictive in character. It is understood that the embodiments have been shown and described in the foregoing specification in satisfaction of the best mode and enablement requirements. It is understood that one of ordinary skill in the art could readily make a nigh-infinite number of insubstantial changes and modifications to the above-described embodiments and that it would be impractical to attempt to describe all such embodiment variations in the present specification. Accordingly, it is understood that all changes and modifications that come within the spirit of the invention are desired to be protected.